WHAT IS CLAIMED IS:

1. A digital BTSC signal encoder for encoding first and second digital audio signals with adjustments to conform to the BTSC MTS standard, said encoder comprising:

(A) an input matrix for receiving said first and second digital audio signals comprising an adder for summing said first and second digital audio signals to generate a digital sum signal, and a subtractor for subtracting the second digital audio signal from the first digital audio signal to generate a digital difference signal;

(B) sum channel processor comprising a first digital filter for digitally processing said digital sum signal; and

(C) difference channel processor comprising a second digital filter for digitally processing said digital difference signal, further comprising a spectral compressor and a spectral feedback loop for generating a spectral gain control signal that is used to generate a first control signal that is input to the spectral compressor and that is clamped so that the first control signal does not go below a minimum value;

wherein the digital BTSC encoder operates at a sample rate that is at least substantially ten times the bandwidth of the first and second digital audio signals so that said digital filters in the sum channel processor and the difference channel processor substantially match BTSC analog filter transform functions in both magnitude and phase.

2. The digital BTSC signal encoder of claim 1, wherein the input matrix comprises a first input low-pass filter for filtering the first digital audio signal and a second input low-pass filter for filtering the second digital audio signal, where the first and second input low-pass filters are each characterized by a cutoff frequency that is less than or equal to approximately 15-20 kHz.

3. The digital BTSC signal encoder of claim 2, wherein the first and second input low-pass filters are each characterized by a stop-band attenuation of substantially 50-70dB.

4. The digital BTSC signal encoder of claim 1, wherein the input matrix, sum channel processor and difference channel processor are formed together on a common substrate.

5. The digital BTSC signal encoder of claim 4, wherein the substrate is silicon.

6. The digital BTSC signal encoder of claim 4 wherein the input matrix, sum channel processor and difference channel processor are fabricated according to standard CMOS processing.

7. The digital BTSC signal encoder of claim 1, wherein the first control signal is offset from the spectral gain control signal by a first offset value.

8. The digital BTSC signal encoder of claim 7, wherein the first offset value tapers off as the first control signal exceeds a first threshold value.

9. The digital BTSC signal encoder of claim 7, wherein the first offset value includes a positive or negative ramp offset value when the first control signal is between a first threshold value and a second threshold value.

10. The digital BTSC signal encoder of claim 1, wherein the first control signal is clamped to a minimum value when the spectral gain control signal is below a first threshold value and is equal to the spectral gain control signal when the spectral gain control signal is above a second threshold value, and wherein the first control signal comprises a triangular offset component when the spectral gain control signal is between the first threshold value and the second threshold value.

11. A digital integrated circuit BTSC signal encoder, comprising:

(A) matrix means for receiving a digital left channel audio signal and a digital right channel audio signal, and including means for summing said digital left and right channel audio signals and thereby generating a digital sum signal, and including means for subtracting one of said digital left and right channel audio signals from the other of said digital left and right channel audio signals and thereby generating a digital difference signal;

(B) sum channel processing means for processing said digital sum signal; and

(C) difference channel processing means for digitally processing said digital difference signal, said digital channel processing means comprising a gain stage and a feedback loop for generating a selectively adjustable control signal input to the gain stage, wherein the control signal is selectively adjusted to clamp the control signal from going below a minimum value;

wherein the digital BTSC encoder operates at a sample rate so that said sum channel processing means and the difference channel processing means substantially match BTSC analog filter transform functions in both magnitude and phase.

12. The BTSC signal encoder of claim 11, wherein the gain stage comprises a wideband gain stage, and the control signal comprises a wideband gain control signal.

13. The BTSC signal encoder of claim 11, wherein the gain stage comprises a spectral compressor, and the control signal comprises a spectral gain control signal.

14. The BTSC signal encoder of claim 11, wherein the clamped control signal is selectively adjusted by adding an offset value.

15. The BTSC signal encoder of claim 14, wherein the offset value tapers off as the clamped control signal exceeds a first threshold value.

16. The BTSC signal encoder of claim 14, wherein the clamped control signal is selectively adjusted by adding a ramped offset when the clamped control signal exceeds a first threshold value.

17. A method for controlling low frequency stereo separation for a digital BTSC encoder by adjusting a gain control signal in a feedback loop of the BTSC encoder, comprising:

clamping the gain control signal at a minimum value when the gain control signal amplitude is below a first threshold value to form a clamped gain control signal; and

adding a tapered offset to the clamped gain control signal that rolls off to zero when the gain control signal equals a second threshold value to form a tapered gain control signal, where the second threshold value defines a region of operation for the BTSC encoder where the gain control signal is dominated by noise.

18. The method of claim 17, further comprising adding a triangular offset to the tapered gain control signal when the value of the gain control signal is between the first threshold value and a second threshold value.

19. The method of claim 17, wherein the gain control signal comprises a wideband gain control signal.

20. The method of claim 17, wherein the gain control signal comprises a spectral gain control signal.

21. A BTSC signal encoder for encoding first and second audio signals with adjustments to conform to the BTSC MTS standard, said encoder comprising:

(A) a matrix for receiving said first and second audio signals comprising an adder for generating a sum signal, and a subtractor for generating a difference signal;

(B) sum channel processor for processing said sum signal; and

(C) difference channel processor for processing said difference signal, further comprising a spectral compressor and a spectral feedback loop for generating a spectral gain control signal that is used to generate a first control signal that is input to the spectral compressor and that is clamped so that the first control signal does not go below a minimum value.

22. The BTSC signal encoder of claim 21, wherein the encoder is implemented as a digital BTSC encoder.

23. The BTSC signal encoder of claim 21, wherein the encoder is implemented as an analog BTSC encoder.

24. A BTSC encoder for encoding first and second audio signals with adjustments to conform to the BTSC MTS standard, said encoder comprising:

(a) a matrix for receiving said first and second audio signals comprising an adder for generating a sum signal, and a subtractor for generating a difference signal;

(b) sum channel processor comprising a first digital filter for digitally processing said sum signal;

(c) difference channel processor with spectral gain feedback adjustment and wideband gain feedback adjustment so that the difference channel processor complies with the requirements of the BTSC MTS standard; and

(d) a bypass circuit for optionally bypassing the adder and the subtractor in the matrix to pass the first and second audio signals directly to the sum channel processor and difference channel processor.

25. The BTSC encoder of claim 24, wherein the first audio signal input to the matrix is sent to the sum channel processor and the second audio signal is sent to the difference channel processor.

26. The BTSC encoder of claim 24, wherein the first audio signal input to the matrix is sent to the difference channel processor and the second audio signal is sent to the sum channel processor.

27. The BTSC encoder of claim 24, wherein the difference channel processor comprises a second digital filter that is used during SAP audio processing.

28. A BTSC signal encoder for encoding first, second and third audio signals with adjustments to conform to the BTSC MTS standard, said encoder comprising:

(a) a matrix for receiving first and second audio signals comprising an adder for generating a sum signal, and a subtractor for generating a difference signal;

(b) sum channel processor;

(c) a difference channel processor with a first spectral gain adjustment and wideband gain adjustment so that difference channel processing of the difference signal complies with the requirements of the BTSC MTS standard; and

(d) a SAP channel processor for processing the third audio signal with a second spectral gain adjustment and wideband gain adjustment so that the SAP channel processing of the third audio signal complies with the requirements of the BTSC MTS standard.